CLAIMS

1. An electronic signal processor for processing an input signal, said input signal including a band of frequencies, said signal processor comprising:

a first filter with an input coupled to the input signal, said filter processing the lowest frequencies in said band of frequencies with a frequency response curve that has a slope that is a minimum of 12 db/octave to provide a filtered output signal;

at least one gain stage with an input coupled to the first filter for receiving the filtered output signal, for amplifying the filtered output signal and for providing an amplified output signal at an output; and

a second filter coupled to the output of the at least one gain stage for receiving the amplified output signal, for filtering the amplified output signal and for providing an output signal of the signal processor at an output terminal thereof.

2. The electronic signal processor as claimed in accordance with claim 1 wherein said first filter processes the lowest frequencies in the band of frequencies with a frequency response slope that is a minimum of 18 db/octave.

3. The electronic signal processor as claimed in accordance with claim 2 wherein any intermodulation distortion frequency products resulting from amplification of the lowest frequency signals in the band of frequencies by said at least one gain stage is minimized.

4. The electronic signal processor as claimed in accordance with claim 1 wherein said first filter is a complex filter having a frequency response curve with a plurality of corner frequencies that define different slopes of the frequency response curve between adjacently located corner frequencies.

5. The electronic signal processor as claimed in accordance with claim 4, said first filter further comprising:

a first switch means for selecting one of a plurality of switch positions, said first switch means interposed in said first filter between the input and output thereof, said first switch means also coupled to said input signal; and

a plurality of capacitors, each of said capacitors having a different value of capacitance, one of each of said plurality of capacitors coupled to one of said plurality of switch positions such that said first switch means can select one of said plurality of capacitors, each of said capacitors also coupled to said output of the first filter;

whereby said first switch means selectively couples the input signal to one of said plurality of capacitors and whereby said plurality of capacitors provides a plurality of corner frequencies for the frequency response curve for said lower frequencies.

6. The electronic signal processor as claimed in accordance with claim 4, said first filter further comprising:

at least two potentiometers that may be adjusted to control the volume at the output of the signal processor,

said at least two potentiometers coupled to said input signal, said potentiometers adjustable to supply a portion of the input signal at one terminal thereof;

a second switch means having at least two switch positions for selecting one of said at least two potentiometers and for receiving the portion of the input signal at said one terminal thereof, said second switch means coupled to said output of the first filter; and

whereby said second switch means selectively couples the portion of the input signal from a selected potentiometer to the output of the first filter and whereby said second switch means provides the ability to switch between at least two adjusted output volumes.

7. The electronic signal processor as claimed in accordance with claim 6, said at least two potentiometers provide substantially the same range of adjustment of volume.

8. The electronic signal processor as claimed in accordance with claim 1, wherein said second filter is characterized by a frequency response curve with a first passband for lower frequencies and a second passband for higher frequencies, wherein said second passband provides a greater attenuation of the higher frequencies than the first passband for the lower frequencies.

9. The electronic signal processor as claimed in accordance with claim 1, wherein said at least one gain stage has at least one amplifier with an inverting input terminal and an output terminal, said at least one amplifier for amplifying the filtered output signal from the first filter, said at least one gain stage having oppositely poled diodes between the output and the

inverting input thereof to limit the output amplitude of said at least one amplifier.

10. The electronic signal processor as claimed in accordance with claim 1, said signal processor further comprising:

buffer means for receiving the input signal and for providing a low impedance output signal that is representative of the input signal to the input of the first filter.

11. A method of processing an input signal that includes a band of frequencies with a signal processor to substantially reduce lower frequency intermodulation distortion, with the signal processor comprising a first filter of the second order high pass type, a gain stage with amplification, and a second filter of the low pass type, said method comprising the steps of:

filtering the input signal with the first filter of the second order high pass type;

supplying the filtered input signal to the gain stage;

amplifying the filtered input signal;

supplying the amplified and filtered input signal to the second filter of the low pass type;

filtering the amplified and filtered input signal with the second filter of the low pass type; and

supplying the signal, as filtered by the second filter of the low pass type, as an output signal of the signal processor.

12. The method of processing an input signal as claimed in accordance with claim 11, wherein a frequency response curve for the second order high pass first filter further includes a plurality of corner frequencies, and said first filter includes means for changing at least some of the plurality of corner frequencies, said method further comprising the additional step of:

changing some of the corner frequencies of the plurality of corner frequencies in the frequency response curve of the second order high pass first filter to change the frequency response of the first filter.

13. The method of processing an input signal as claimed in accordance with claim 11, wherein said first filter includes two gain controls with overlapping gain characteristics and means for switching between the gain controls, said method comprising the additional step of:

selecting one of the two gain controls in the first filter to control the gain of the input signal through the signal processor.

14. A method of processing an input signal that includes a band of frequencies with a signal processor to substantially reduce lower frequency intermodulation distortion, with the signal processor comprising a first filter of the third order high pass type, a gain stage with amplification, and a second filter of the low pass type, said method comprising the steps of:

filtering the input signal with the first filter of the third order high pass type;

supplying the filtered input signal to the gain stage;

amplifying the filtered input signal;

supplying the amplified and filtered input signal to the second filter of the low pass type;

filtering the amplified and filtered input signal with the second filter of the low pass type; and

supplying the signal, as filtered by the second filter of the low pass type, as an output signal of the signal processor.

15. The method of processing an input signal as claimed in accordance with claim 14, wherein a frequency response curve for the third order high pass first filter further includes a plurality of corner frequencies, and said first filter includes means for changing at least some of the plurality of corner frequencies, said method further comprising the additional step of:

changing some of the corner frequencies of the plurality of corner frequencies in the frequency response curve of the third order high pass first filter to change the frequency response of the first filter.

16. The method of processing an input signal as claimed in accordance with claim 14, wherein said first filter includes two gain controls with overlapping gain characteristics and means for switching between the gain controls, said method comprising the additional step of:

selecting one of the two gain controls in the first filter to control the gain of the input signal through the signal processor.

17. An electronic signal processor for processing an input signal that includes a band of frequencies to

substantially reduce lower frequency intermodulation distortion, said signal processor comprising:

a first filter of the second order high pass type with an input coupled to the input signal, said filter processing the input signal to provide a filtered output signal;

at least one gain stage with an input coupled to the first filter for receiving the filtered output signal, for amplifying the filtered output signal and for providing an amplified output signal at an output; and

a second filter of the low pass type coupled to the output of the at least one gain stage for receiving the amplified output signal, for filtering the amplified output signal and for providing an output signal of the signal processor at an output terminal thereof.

18. The electronic signal processor as claimed in accordance with claim 17, wherein said second filter is of the second order low pass type.

19. The electronic signal processor as claimed in accordance with claim 17, wherein said first filter has a frequency response curve that includes a plurality of corner frequencies, said signal processor further comprising:

means for permitting a user of the signal processor to change at least some of the corner frequencies to change the frequency response curve for the first filter.

20. The electronic signal processor as claimed in accordance with claim 17, said signal processor further comprising:

two gain controls with overlapping gain characteristics over at least a portion of the band of frequencies in the input signal; and

means for selecting one of the two gain controls to selectively control the gain of the input signal through the signal processor.

21. An electronic signal processor for processing an input signal that includes a band of frequencies to substantially reduce lower frequency intermodulation distortion, said signal processor comprising:

a first filter of the third order high pass type with an input coupled to the input signal, said filter processing the input signal to provide a filtered output signal;

at least one gain stage with an input coupled to the first filter for receiving the filtered output signal, for amplifying the filtered output signal and for providing an amplified output signal at an output; and

a second filter of the low pass type coupled to the output of the at least one gain stage for receiving the amplified output signal, for filtering the amplified output signal and for providing an output signal of the signal processor at an output terminal thereof.

22. The electronic signal processor as claimed in accordance with claim 21, wherein said second filter is of the second order low pass type.

23. The electronic signal processor as claimed in accordance with claim 21, wherein said first filter has a frequency response curve that includes a plurality of

corner frequencies, said signal processor further comprising:

means for permitting a user of the signal processor to change at least some of the corner frequencies to change the frequency response curve for the first filter.

24. The electronic signal processor as claimed in accordance with claim 21, said signal processor further comprising:

two gain controls with overlapping gain characteristics over at least a portion of the band of frequencies in the input signal; and

means for selecting one of the two gain controls to selectively control the gain of the input signal through the signal processor.

25. An electronic signal processor for processing an input signal that includes a band of frequencies to substantially reduce lower frequency intermodulation distortion, said signal processor comprising:

a first filter of the second order high pass type with an input coupled to an input signal, said first filter processing the input signal to provide a filtered output signal;

at least one gain stage with an input coupled to the first filter for receiving the filtered output signal, for amplifying the filtered output signal and for providing an amplified output signal at an output; and

a second filter of the low pass type coupled to said at least one gain stage for receiving the amplified output signal, for filtering the amplified output signal

and for providing an output signal of the signal processor at an output terminal thereof.

26. The electronic signal processor as claimed in accordance with claim 25, wherein said second filter is of the first order low pass type.

27. The electronic signal processor as claimed in accordance with claim 25, wherein said first filter has a frequency response curve that includes a plurality of corner frequencies, said signal processor further comprising:

means for permitting the user of the signal processor to change at least some of the corner frequencies to change the frequency response curve for the first filter.

28. The electronic signal processor as claimed in accordance with claim 25, said signal processor further comprising:

two gain controls with overlapping gain characteristics over at least a portion of the band of frequencies in the input signal; and

means for selecting one of the two gain controls to selectively control the gain of the input signal through the signal processor.

29. An electronic signal processor for processing an input signal that includes a band of frequencies to substantially reduce lower frequency intermodulation distortion, said signal processor comprising:

a first filter of the third order high pass type with an input coupled to the input signal, said filter

processing the input signal to provide a filtered output signal at the output of the first filter;

at least one gain stage with an input coupled to the first filter for receiving the filtered output signal, for amplifying the filtered output signal and for providing an amplified output signal at an output; and

a second filter of the low pass type coupled to the output of the at least one gain stage for receiving the amplified output signal and for providing an output signal of the signal processor at an output terminal thereof.

30. The electronic signal processor as claimed in accordance with claim 29, wherein said second filter is of the first order low pass type.

31. The electronic signal processor as claimed in accordance with claim 29, wherein said first filter has a frequency response curve that includes a plurality of corner frequencies, said signal processor further comprising:

means for permitting a user of the signal processor to change at least some of the corner frequencies to change the frequency response curve of the first filter.

32. The electronic signal processor as claimed in accordance with claim 29, said signal processor further comprising:

two gain controls with overlapping gain characteristics over at least a portion of the band of frequencies in the input signal; and

means for selecting one of the two gain controls to selectively control the gain of the input signal through the signal processor.

33. An amplifier for a signal processor, said amplifier having an input and an output, said amplifier comprising:

an amplifying circuit with an inverting input terminal, an non-inverting input terminal and an output terminal, said non-inverting terminal coupled to a reference potential, said output terminal of the amplifying circuit coupled to the output of the amplifier;

a first feedback circuit connected between the inverting input terminal and the output terminal of the amplifying circuit, said first feedback circuit including a resistor, a capacitor and at least two diodes, said at least two diodes oppositely poled between the inverting input and the output terminals of the amplifying circuit;

a second feedback circuit consisting of at least one resistor and one capacitor coupled between an input of said amplifier and the output terminal of said amplifying circuit; and

means for coupling the second feedback circuit to the inverting input of said amplifier circuit.

34. The amplifier as claimed in accordance with claim 33 wherein said reference potential is a ground potential.

35. The amplifier as claimed in accordance with claim 33 wherein the means for coupling the second

feedback circuit to the inverting input of said amplifier circuit is resistive.